

Claims:

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5 1. A mobile screening unit for screening bulk material, said screening unit comprising:

- an elongated mobile support frame having a longitudinal axis;
- a first screener mounted to the support frame and extending

10 longitudinally thereon, the first screener having:

an inlet for receiving bulk material containing large-sized, medium-sized, and small-sized particles,

15 a first outlet for releasing large-sized particles, and

a second outlet for releasing medium-sized and small-sized particles, the first screener being used for screening the bulk material along a first direction substantially parallel to the longitudinal axis of the support frame; and

20 15 a second screener mounted to the support frame and extending longitudinally thereon, the second screener having:

an inlet for receiving medium-sized and small-sized particles conveyed from the first screener,

25 20 a first outlet for releasing medium-sized particles, and

a second outlet for releasing small-sized particles, the second screener being used for screening the medium-sized particles from the small-sized particles along a second direction substantially parallel to the longitudinal axis of the support frame.

25 2. A mobile screening unit according to claim 1, comprising:

30 a feeding hopper for accumulating bulk material, mounted to the support frame and extending longitudinally thereon between the first screener and the second screener, the feeding hopper having an inlet for receiving bulk material and an outlet; and

35 a feeding conveyor positioned to receive the bulk material from the outlet of the feeding hopper and convey the same in the first direction to the inlet of the first screener.

3. A mobile screening unit according to claim 1, comprising a transition conveyor mounted to the support frame and extending longitudinally thereon, the transition conveyor being positioned to receive the medium-sized and small-sized particles released from the second outlet of the first screener and convey the same in the second direction to the inlet of the second screener.

4. A mobile screening unit according to claim 1, comprising a recovering conveyor mounted to the support frame and extending longitudinally thereon, the recovering conveyor being positioned to receive the small-sized particles released from the second outlet of the second screener and convey the same in the first direction to an outlet end thereof.

5. A mobile screening unit according to claim 4, comprising a piling conveyor mounted to the support frame for receiving the small-sized particles from the outlet end of the recovering conveyor and forming a pile of small-sized particles aside from the support frame, the piling conveyor being movable with respect to the support frame between a folded position where it is folded against the support frame along the longitudinal axis thereof and an extended position where it extends in perpendicular to the longitudinal axis of the support frame.

6. A mobile screening unit according to claim 1, comprising a piling conveyor mounted to a rear end of the support frame for receiving the medium-sized particles released from the first outlet of the second screener and forming a pile of medium-sized particles at the rear of the support frame, said piling conveyor being movable between a folded position where it is folded against the rear end of the support frame and an extended position where it extends in the same line as the support frame.

30 7. A mobile screening unit according to claim 1, wherein the first screener is selected from the group consisting of a vibrating screener, a disc screener and a heavy-duty star screener.

8. A mobile screening unit according to claim 1, wherein the first screener is a vibrating screener.

5 9. A mobile screening unit according to claim 1, wherein the second screener is selected from the group consisting of a vibrating screener, a disc screener, a star screener, a rotating screener, a satellite screener, a gyratory screener, and a double-stage vibrating screener.

10 10. A mobile screening unit according to claim 1, wherein the second screener is a rotating screener.

15 11. A mobile screening unit according to claim 2, wherein the feeding hopper comprises retractable rear and lateral side panels.

12. A mobile screening unit according to claim 1, wherein the support frame comprises:

a coupling device for removably coupling the support frame to hauling means; and

20 a wheeled assembly operatively connected to the support frame for allowing transportation of the screening unit by the hauling means.

25 13. A mobile screening unit according to claim 1, wherein the support frame comprises hydraulic support legs for stabilizing the support frame of the screening unit during stationary working operation of the screening unit.

14. A mobile screening unit according to claim 1, wherein the second screener is a double-stage screener comprising a first screening floor for screening the medium-sized particles from the small-sized particles and a second screening floor to further screen the small-sized particles into coarser small-sized particles and finer small-sized particles.

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15. A mobile screening unit for screening bulk material, said screening unit comprising:

- an elongated mobile support frame having a longitudinal axis;
- a first screener mounted to the support frame and extending

5 longitudinally thereon, the first screener having:

an inlet for receiving bulk material containing large-sized, medium-sized, and small-sized particles,

a first outlet for releasing large-sized particles, and

10 a second outlet for releasing medium-sized and small-sized particles, the first screener being used for screening the bulk material along a first direction substantially parallel to the longitudinal axis of the support frame;

15 - a second screener mounted to the support frame and extending longitudinally thereon, the second screener having:

an inlet for receiving medium-sized and small-sized particles conveyed from the first screener,

a first outlet for releasing medium-sized particles, and

20 a second outlet for releasing small-sized particles, the second screener being used for screening the medium-sized particles from the small-sized particles along a second direction substantially parallel to the longitudinal axis of the support frame;

25 - a feeding hopper for accumulating bulk material, mounted to the support frame and extending longitudinally thereon between the first screener and the second screener, the feeding hopper having an inlet for receiving bulk material and an outlet;

30 - a feeding conveyor positioned to receive the bulk material from the outlet of the feeding hopper and convey the same in the first direction to the inlet of the first screener;

- a transition conveyor mounted to the support frame and

35 extending longitudinally thereon, the transition conveyor being positioned to receive the medium-sized and small-sized particles released from the second

outlet of the first screener and convey the same in the second direction to the inlet of the second screener;

5 - a recovering conveyor mounted to the support frame and extending longitudinally thereon, the recovering conveyor being positioned to receive the small-sized particles released from the second outlet of the second screener and convey the same in the first direction to an outlet end thereof;

10 - a first piling conveyor mounted to the support frame for receiving the small-sized particles from the outlet end of the recovering conveyor and forming a pile of small-sized particles aside from the support frame, the piling conveyor being movable with respect to the support frame between a folded position where it is folded against the support frame along the longitudinal axis thereof and an extended position where it extends in perpendicular to the longitudinal axis of the support frame; and

15 - a second piling conveyor mounted to a rear end of the support frame for receiving the medium-sized particles released from the first outlet of the second screener and forming a pile of medium-sized particles at the rear of the support frame, said piling conveyor being movable between a folded position where it is folded against the rear end of the support frame and an extended position where it extends in the same line as the support frame.

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16. A screening method for screening bulk material, said method comprising the steps of:

a) receiving bulk material containing large-sized, medium-sized, and small-sized particles;

25 b) screening large-sized particles from medium-sized and small-sized particles along a first longitudinal direction;

c) receiving medium-sized and small-sized particles obtained in a step (a); and

30 d) screening medium-sized particles from small-sized particles along a second longitudinal direction substantially parallel to the first longitudinal direction.

17. A screening method according to claim 16, wherein step (a) comprises the step of receiving the bulk material in a direction substantially parallel to the first longitudinal direction.

5 18. A screening method according to claim 17, wherein step (c) comprises the step of receiving medium-sized and small-sized particles in a direction substantially parallel to the second longitudinal direction.